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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/490,172	01/22/2000	Deborah T. Marr	2207/7942	6827

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EXAMINER

CHEN, TE Y

ART UNIT	PAPER NUMBER
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2171

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DATE MAILED: 03/15/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/490,172

Applicant(s)

MARR, DEBORAH T.

Examiner

Susan Y Chen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 February 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-11 and 13-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3-11 and 13-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Response to Amendment

1. This is in response to amendment filed on 02/24/2003 (paper # 14).
2. Claims 1, 3-11, 13-20 remain for examination, claims 1, 10, 11 and 20 have been amended.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 3-11 and 13-20, are rejected under 35 U.S.C. 103(a) as being unpatentable over Kimura et al. (U.S. Patent. No. 6,105,127), in view of Huwitt et al. (U.S. Patent No. 6,339,808) and further in view of Borkenhagen et al. (U.S. Patent No. 6,567,839).

Kimura et al's patent (EP 0827071) was provided twice by applicant via IDS filed on 10/03/2001 and 08/07/2002.

As to claims 11 and 20, Kimura et al. (Thereinafter referred as Kimura) disclosed an apparatus for establish thread priority in a processor [Title; Abstract; Fig. 2] comprising:

a) a memory including Task priority Register (TPR) to store a value to indicate which one of the threads has a higher priority [e.g., Fig (s). 6-7; Fig. 15; col. 8, lines 59 – col. 9, line 8, etc.];

b) a resource allocated between the plurality of threads depending on a priority assigned to each thread in the memory [e.g., Abstract, lines 10-15; the shared resource functional unit, col. 6, lines 19-30; col. 8, lines 17-27].

Kimura does not expressly disclose an Advanced Programmable Interrupt Controller (APIC) with a counter loaded with a predetermined value.

However, Hewitt et al. (hereinafter referred as Hewitt) discloses Advanced Programmable Interrupt Controller (APIC) [e.g., 221, 223, 225, 227, Fig. 2] with a counter [e.g., the FEE0 0390H Current Count Register for Timer of Table 1, col. 5, line 3 at seq.] loaded with a predetermined value of Programmable Interrupt Controller (PIC) [e.g., the Task Priority Register, Arbitration Priority Register, Processor Priority Register of Table 1 at col. 5; col. 4, lines 22-26; col. 8, line 38 - col. 9, line 10; Fig. (s), 2-6]. Thus, It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Kimura and Hewitt to further modify the combined system with a counter loaded with a predetermined value of Programmable Interrupt Controller (PIC), because by doing so, the combined system would reduce the latency inherent in a complex serial bus architecture [e.g. Hewitt: col. 3, lines 7-27].

The combined system of Kimura and Hewitt fails to expressly disclose that the predetermined value of the counter is for plurality of threads depending on the priority assigned to each thread.

However, Borkenhagen et al. (hereinafter referred as Borkenhagen) discloses a thread switch control technique having a counter with the predetermined value for plurality of threads depending on the priority assigned to each thread [col. 5, lines 32 – col. 6, line 11]. Thus, It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Kimura, Hewitt and Borkenhagen to further modify the Programmable Interrupt Controller (PIC) of the combined system with a counter loaded with a predetermined value as taught by Borkenhagen, such that the combined system will provided a counter with the predetermined value for plurality of threads depending on the priority assigned to each thread. Because by doing so, the system will not only having the advantage to reduce the latency inherent in a complex serial bus architecture but also including the feature of altering the priority which allows changing the frequency of thread switching, increasing execution cycles for a critical task, and decreasing the number of processing cycles lost by the high priority thread because of thread switch latency [Borkenhagen: col. 6, lines 5-11].

As to claims 13-19, in addition to the feature of claim 11, Kimura, Hewitt and Borkenhagen further disclosed that access to the resource is given to the thread with higher priority and the usage of the resource [e.g., Kimura: col. 4, line 64-col. 5, line 10;

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col. 6, lines 26-30], wherein the resource is a decode unit [Kimura: 1-3, Fig. 2; instruction decode units 1-3; Fig. 13; 111-113, Fig. 15] in a processor system, the decode unit correspond to a bus unit [for example, Kimura: Internal Bus and Instruction Decode Units 1-3, Fig. 13] which including queues [for example, Kimura: 30, 40, 50, Fig. 2; 140, Fig. 15] to storing bus requests from a plurality of threads [Kimura: Fig. 2; Fig. 8; Fig. 11; Fig. 13] and control logic [Kimura: 60, Fig. 2; 60, 150, 170, Fig. 15] couple to the queues to select based on the priority value [Kimura: Fig. 2; Fig (s). 8-9; Fig. 11; Fig. 13; Fig. 15].

As to claims 1, 3-10, the steps in the claimed method is deemed to be made obvious by the functions of the apparatus structure of claims 11 and 13-20 in the combination discussed above, hence were rejected for the same reasons.

Response to Arguments

4. Applicant's arguments with respect to claims 1-20 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

5. To expedite the process of re-examination, the examiner requests that all future correspondences in regard to overcoming prior art rejections or other issues (e.g. 35 U.S.C. 112) set forth by the Examiner prior to the office action, that applicant should

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provide and link to the most specific page and line numbers of the disclosure where best support is found (see 35 U.S.C. 132).

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Susan Chen whose telephone number is (703) 308-1155. The examiner can normally be reached Monday through Friday from 7:30 A.M. to 4:30 P.M.

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8. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Safet Metjahic, can be reached at (703) 308-1436. The fax phone numbers for this group is: (703) 872-9306.

9. Any inquiry of a general nature of relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 305-9600.

Susan Chen

Feb. 23, 2004



UYEN LE
PRIMARY EXAMINER